

THE SCIENCE NEWS-LETTER

A Weekly Summary of Current Science

EDITED BY WATSON DAVIS

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WOMAN FINDS NEW CAVE MAN SKULL AT GIBRALTAR

Portions of a human skull, including the frontal bone, belonging to the mysterious Neanderthal race that vanished from the earth about 25,000 years ago have been discovered at Devil's Tower, Gibraltar, by Daisy E. Garrod, of Oxford University. The bones were buried at a depth of ten feet and with them were the rude stone implements used by these cave men of prehistoric Europe.

The discovery is regarded by anthropologists as being of considerable importance because it corroborates the data of a similar discovery made at Gibraltar in 1848.

The Gibraltar skull brought to light 78 years ago was an historic event since it gave the first clue to a branch of the human race very different from people of today. But this significance of the skull was not realized until 1856, when a skeleton of the same peculiar type was unearthed at the Neanderthal region in Prussia. This Neanderthal skeleton was so strange that it was at first regarded as the body of a man misshapen by some terrible disease or deformity, but later finds proved the existence of an entire race with large flat skulls; great ridges over the brows; snout-like noses, probably unlike any noses that we have any conception of; thick, clumsy joints; heads carried heavily bent forward. The remains of this type of human being have been found in widely scattered places in Europe, and evidence indicates that the race existed for some 50,000 years in the era before the last great ice age.

The first Gibraltar skull could be dated no more exactly than to say that it belonged to the Neanderthal race of the Mousterian age. It is possible that this new skull will enable anthropologists to find out more definitely when, why and how these extinct people made their cave homes in southern Spain.

210

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THE DISCOVERY OF THE FIRST Fossil Man

Portion of a human skull, including the frontal bone, belonging to the species
was discovered from the earth about 25,000 years ago near
Dordrecht in Holland. It was discovered by Dr. D. A. Broekman.
The bone was found at a depth of 15 feet and was found in a
stratum which is of the same age as the Neanderthal stratum.

The discovery is regarded as important in the history of man.
It corresponds to the date of a similar discovery made in Germany in 1908.

The discovery of the first fossil man is a very important one.
It was the first time that a human bone was found in a stratum
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The first fossil man could be dated by the fact that it is
believed to be the same age as the Neanderthal man. It is believed that this
man lived at the same time as the Neanderthal man. It is believed that this
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INTERNATIONAL RESEARCH COUNCIL TO VOTE ON GERMANY'S ADMISSION

A special general assembly of the International^{al} Research Council, at which about thirty nations were represented was held in Brussels on June 29 and following days.

The principal matter given attention at this meeting was that of the admission of Germany to the Council. The Council was organized during the war by representatives of the Allied and neutral nations and the Central European powers have not yet been admitted to the Council.

Dr. Vernon Kollogg, permanent secretary of the American National Research Council, attended the Assembly and voted for the admission of the Central European powers.

ATOM BARRAGE MADE VISIBLE TO HUMAN EYES

A simplified apparatus which makes visible in water vapor the path taken by an alpha-ray has just been perfected after work of many months by Prof. Charles T. Knipp of the University of Illinois.

The device will be of great importance to the scientist studying this phenomenon as well as to the teacher of physics or chemistry who wishes to present his subject in the light of the electron theory.

Theories of the electronic system and conjectures as to the nature of the atomic structure, formulated in the last century by Sir J. J. Thomson and later by Sir Ernest Rutherford, have been substantiated by actual demonstrations with the apparatus of Prof. Knipp.

Although C.T.R. Wilson, working at Cambridge, England, was first able to show the alpha-ray by means of a highly complicated and expensive machine, it remained for Prof. Knipp to construct a device which not only shows the tracks in a more perfect form but which may be constructed for one-tenth the cost of Wilson's.

The construction is comparatively simple and consists of a glass flask containing water and placed side up in a supporting stand. The moistened bottom of the flask serves as one electrode and the surface of the water in the flask is the other. A hand-bulb attached to the neck regulates the pressure within which tungsten wires connected to the electrodes carry the electric current.

A glass tube containing the radium salt, the sources of the ray tracks, is fused into the flask and lies near the flat surface. In order to give a high visibility to the tracks, a properly shaded electric light bulb illuminates the water vapor in the top of the inverted container.

When electrical connections are made and the bulb pressed and then released, tracks made by the alpha-ray coursing through the moisture-laden gas are readily seen. To the untrained eye they appear as fine, thread-like lines which dart at all angles from one point, remain for a moment and then disappear.

INTERNATIONAL RESEARCH COUNCIL TO STUDY THE ATMOSPHERE

A special committee of the International Research Council, at which about thirty nations were represented, met in Geneva on June 22 and following days.

The principal matter under discussion at this meeting was the question of cooperation between the scientific and technical communities of the world in the study of the atmosphere and the related problems of weather and climate. The committee was formed to study these problems and to recommend ways of cooperation between the scientific and technical communities of the world.

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To the eye of the scientist, however, they mark the trail of helium atoms ionizing the gas as they pass along. The ions of the gas form nuclei for the condensation of the vapor which has been brought to the right conditions by pressing the bulb and as the vapor condenses the droplets quickly become visible.

"This trail might be called a wreckage of atoms which are left in the wake of the speeding alpha-ray," Prof. Knipp says. "It is quite similar, on a miniature scale, to the path left by a tornado as it travels across the country."

One of the most important features of the apparatus is the inclosure of the radium salts in the glass tube, through a thin window of which the rays emanate. By this process of construction the inventor has avoided any contamination of the field into which the rays are projected and consequently has produced rays coming from one point only. Heretofore it has been impossible to obtain this effect.

TWO HOUR OLD LEMONADE SWEETER THAN FRESH DRINK

Lemonade at bed-time is not the same thing it was at supper-time when sister made it. It is sweeter. Its chemical composition is actually different, according to Miss Edna M. Koster, experimenter in the bio-chemical laboratory of Dr. Max S. Dunn of the University of California, Los Angeles.

Patrons of soft-drink counters have noticed that fresh lemonade, made directly on short order from the fruit and cane-sugar, is sharper and sourer than the "ripened" variety which has been stored for a few hours before use. In their care to issue only a fresh sanitary beverage the dispensers are thus fostering excessive sugar consumption, already a national evil.

Experiments by Miss Koster with a polariscope and other instruments indicate that within an hour and a half practically all the cane sugar in lemonade disappears, and in its place there comes a much sweeter mixture of the two simpler sugars glucose and levulose. It is probable that this action is the cause of the greater sweetness of the older beverage. The levulose is the principal sweetener, but recent experiments in another laboratory indicate that glucose, long rated at a low value, is not far behind cane sugar in actual power to sweeten a complete food product. The mixture of the two sugars is accordingly much ahead of the common sugar of trade.

This process of sugar transformation, well known to syrup manufacturers under the name of "inversion", is virtually the same as the process of digestion in the stomach. In the case of lemonade the high content of citric acid takes the place of the hydrochloric acid which engineers the digestive process.

Obviously the sweetening of lemonade by mere lapse of time is entirely harmless. In fact the resulting beverage, being partially digested, is even more readily assimilated than fresh sugar. Furthermore, the citric acid, itself very beneficial, does not seem to suffer in the process which it promotes. No yeast or other outside organism is needed, and the process bears no direct relation to fermentation or alcohol production.

To the eye of the scientist, however, they mark a trail of boiling steam ionizing the gas as they pass along. The ions of the gas form nuclei for the condensation of the vapor which has been brought to the right conditions by pressure and the trail and as the vapor condenses the droplets quickly become visible.

"This trail might be called a 'wisp' of steam which was left in the wake of the speeding alpha-ray," Prof. Knap says. "It is quite similar, on a miniature scale, to the path left by a torpedo as it travels across the ocean."

One of the most important features of the apparatus is the ionization chamber which is in the glass tube, through which a thin window at which the rays pass. By this process of ionization the detector has avoided any contamination of the fluid which the rays are projected and consequently has produced rays coming from one point only. Heretofore it has been impossible to obtain this effect.

TWO HOUR OLD LIMONADE SWEETER THAN FRESH DRINK

Limonade of old-time is not the same thing it was its sugar-free when it was made. It is sweeter. Its chemical composition is markedly different, according to Miss Anna L. Kober, experimenter in the physicochemical laboratory of W. W. R. Dunn of the University of California, Los Angeles.

Professor Dunn's laboratory has found that fresh lemonade, made directly on short order from the fruit and cane sugar, is sharper and sourer than the "ripened" variety which has been stored for a few hours before use. The latter tends to become only a fresh-tasting beverage, the difference being that the former is a sugar confection, already a national evil.

Experiments by Miss Kober with a polariscope and other instruments indicate that within an hour and a half practically all the cane sugar in lemonade disappears and in its place there comes a much sweeter mixture of the two sugar esters glucose and levulose. It is probable that this action is the cause of the sweetening of the older beverage. The levulose is the principal sweetener, but recent experiments in another laboratory indicate that glucose, found rated at a low value, is not far behind cane sugar in actual power to sweeten a definite food product. The mixture of the two sugars is strikingly much sweeter than the common sugar of trade.

This process of sugar transformation, well known as type-metabolism in other the name of "inversion", is probably the same as the process of digestion in the stomach. In the case of lemonade the high content of citric acid takes the place of the hydrochloric acid which initiates the digestive process.

Obviously the sweetening of lemonade is a very rapid process at times as entirely harmless. In fact the resulting beverage, being partially digested, is even more readily assimilated than fresh sugar. Furthermore, the citric acid, itself very beneficial, does not seem to enter in the process which is promoted. No good or other side effect is needed, and the process leaves no direct relation to fermentation or alcohol production.

SCIENTIFIC FARMING TO CONQUER DROUGHT ALONG THE VOLGA

Some 77,000,000 roubles (about \$35,000,000) have been appropriated by the Soviet government to fend off famines in the Volga district. On experimental farms attempts are being made to find the best system of crop raising to offset the disadvantages of the irregular rainfall in the famous famine region of southeast Russia known as the Lower and Middle Volga.

The average precipitation in this huge section is only 16 inches per year, conditions which are about the same as those in the state of Utah, according to a report by N.M. Toulaikoff, director of the agricultural experiment station at Saratoff, made to a committee of the Geographical Society of Geneva studying world calamities. The same conditions prevail in the south of the Ukraine and a considerable part of northern Caucasus.

If advantage were taken of all the natural factors which go to make up the local climate and if modern methods of agriculture were used, there would be enough moisture to insure a regular succession of crops, M. Toulaikoff maintains. Taken as a whole this part of Russia has never been extensively cultivated and in consequence is very fertile. Rye and summer wheat cultivated under modern conditions have been made to produce heavier yields than were ever before obtained in this section. Introduction of Indian corn, millet, beets and other vegetables which do well in hot weather might very profitably lead to cattle breeding and an increased milk supply it is believed.

Since drought in April, May and June always spelled disaster to 90 per cent. of the usual crops sown, in the old days the peasants always kept on hand reserve supplies to carry them over the bad years. Agricultural conditions, however, like everything else, have been completely unbalanced with consequent distress to the rural population.

The only solution, declares M. Toulaikoff, lies in building up a carefully organized system of farming that takes full advantage of natural local conditions, since irrigation on such a large scale and under present conditions is out of the question.

SMALLEST PARTICLES SAID TO SURROUND ELECTRONS

That particles even smaller than the electrons, hitherto supposed to be the smallest things in the world, surround the parts of which atoms are built up, and that this hypothesis may reconcile the old wave theory of light and the newer "quantum" theory, is the suggestion made by Sir Joseph Thomson, considered the leader of British physicists. This was made in his recent Kelvin lecture before the Institution of Electrical Engineers. According to modern notions, an atom consists of a central, rather massive, nucleus charged with positive electricity called a proton, surrounded at relatively great distances by ultra-minute particles of negative electricity called electrons, which rotate in different orbits around the nucleus.

In order to reconcile the modern view that energy is omitted in small separate bundles or "quanta", with the older ideas, Sir Joseph said, it is necessary to assume

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PERMANENT PAINT FOR IRON DISCOVERED BY SWISS

The annual loss to the world due to the rusting of iron runs into many millions of dollars, and the problem of its prevention is being studied by scientists in all civilized countries. Zinc, tin, nickel, ordinary lead paint and many other things are useful preventives, but they do not last, and have to be re-applied more or less frequently.

A remarkable discovery is now announced from Switzerland. Dr. A. V. Blom, of Berne, has made a new lead paint which affords complete and permanent protection to iron. This paint is of a very special character; it is made by melting lead in an electric furnace and blowing through it air and certain reducing gases, so that a dross or scale is produced which consists of colloidal or extremely finely divided lead dispersed in yellow lead oxide. When it is powdered and mixed with a specially prepared linseed oil, and applied to an iron surface, very minute particles of lead separate out and gradually penetrate into the surface of the iron. The presence of the lead in the treated iron has been proved by photomicrographs and by chemical analysis. Iron objects painted with this new pigment have not shown any signs of rusting after prolonged exposure, or after being heated in steam. This discovery may lead to extremely important developments.

INJURY EPIDEMIC THREATENS HEALTH GAINS

Rejoicing over the lengthening of the average span of life from 41 to 56 years during the last few decades should be tempered by the fact that the death rate in the age group above 40 is increasing, Dr. J. Howard Beard, of the University of Illinois, claimed recently in warning students of the need of better health.

"The gain in the expectancy of life is almost entirely due to the saving of lives under 35 by the better control of communicable diseases and by infant welfare work," he said.

"At the ages of 45 to 50 there are four more deaths per thousand than 20 years ago; at 50 to 55, six more; and at 55 to 60, eight more," he pointed out.

There is a real danger that the net gain in lives saved from infection will be lost because of the increasing number of fatalities from accident, Dr. Beard believes. He states that an epidemic of contagion is being superseded by an epidemic of injury.

"Whether or not the average length of life shall continue to rise will be determined by how much each person will permit science, education, and religion to influence his habits, control his desires and direct his action," Dr. Beard added in conclusion.

The belief that stars can be seen in the daytime by looking down a deep well is untrue.

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A remarkable discovery in new announced from Switzerland. Dr. A. V. Baer, of Zurich, has made a new kind of paint which affords permanent protection to iron. This paint is of a very special character. It is made by mixing iron in a special furnace, and blowing through it a stream of oxygen. The result is a kind of scale or crust which cannot be removed or scratched. It is a special kind of scale, and is called "iron scale". It is in fact a very hard, and is applied to iron surfaces, very much like the kind of scale which is applied to the surface of the iron. The process of the iron in the furnace has been proved by spectroscopic analysis, and by chemical analysis. Iron objects painted with this new pigment have shown, by tests of rusting after prolonged exposure, or after being heated in a furnace, that they last for extremely long periods of time.

INHERITED THROMBOSIS INHIBITS GAIN

Repeating over the inheritance of the average span of life from 21 to 25 years during the last few decades, it is reported by the last World Health Fair in the new group shown to be inherited. Dr. A. Baer, of the University of Illinois, claimed recently to have shown that the inheritance of better health.

"The gain in the expectancy of life is almost entirely due to the saving of lives under the better control of communicable diseases and by infant welfare work," he said.

"The rate of 45 to 50 there are four more deaths per thousand than 20 years ago at 50 to 60, six more; and at 65 to 70, eight more," he pointed out.

There is a real danger that the gain in life expectancy will be lost because of the increasing number of inherited diseases, Dr. Baer believes. He stated that in epidemic of contagious disease, the inheritance of better health.

"Whether or not the average length of life itself continues to rise will be determined by how much death is prevented by communicable diseases, and by the influence of his habits, control his diet and his life," Dr. Baer added.

The belief that there can be gain in the degree of living even a deep well is

OLDEST YUCATAN RUINS DISCOVERED BY AMERICANS

The antiquity of the ancient Maya civilization of Yucatan has been pushed backwards by at least a century through discoveries that have just been made by archaeologists of the Carnegie Institution of Washington.

Hitherto unknown archaeological ruins, called Macanxoc, meaning "You cannot read it", were found by E. S. Thompson and J. Charlott, members of the Carnegie Institution staff, on May 24, according to information reported to Washington by Dr. Sylvanus G. Morley, in charge of the extensive diggings centered at Chichen Itza.

Macanxoc is said to be the religious and ceremonial center of Coba, a large provincial Old Maya Empire City, located fifty miles east of Chichen Itza. The archaeologists have been able to cipher sculptured inscriptions on stelae found at Macanxoc that date from 364 to 413 A. D. From the style, sculpture and dates of the hieroglyphics on the remains, the experts have concluded that Macanxoc is the oldest center of Maya civilization thus far known to Yucatan.

The most brilliant Maya paintings so far known and the best preserved painted serpent heads yet found were unearthed recently in the Temple of the Warriors at Chichen Itza by E. H. Morris. Remains of a serpent column temple decorated with these works of art were revealed when a corner pyramid was excavated.

SKIN TEST FOR INFANTILE PARALYSIS SUSCEPTIBILITY FOUND

A test that will indicate whether or not children are susceptible to infantile paralysis has probably been found by Dr. Edward C. Rosenow of the division of experimental bacteriology of the Mayo Foundation.

Redness of the skin at the end of eighteen to twenty-four hours at the point where suspensions of the streptococcus from infantile paralysis are injected is thought to indicate susceptibility. Complete lack of redness is considered to show that the person is immune. A serum prepared from the blood of horses immunized with the streptococcus prevents this toxic reaction.

Dr. Rosenow cites as supporting evidence for his contention: "the absence of marked reactions in persons fully recovered from poliomyelitis, the strongly positive reactions during the acute state of the disease, and the negative reaction during convalescence."

Skin tests that indicate susceptibility to scarlet fever and diphtheria are already in widespread use in medical practice. Children whose skins show positive reactions are then immunized to prevent their succumbing to the disease in question. At the present time no antitoxin for infantile paralysis has been developed and there are numerous points regarding the skin reaction described that have not yet been worked out, according to Dr. Rosenow.

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The antiquity of the ancient Maya civilization of Yucatan has been pushed back by at least a century through discovery of the ruins of the archaeological site of the Carnegie Institution of Washington.

Further to unknown archaeological ruins, called Macanuco, meaning "You cannot reach it," were found by Dr. E. S. Thompson and Dr. Charles D. Walcott, members of the Carnegie Institution, on May 24, according to information reported to Washington by Dr. Thompson. Dr. Morley, in charge of the extensive Mayan excavations at Chichén Itzá.

Macanuco is said to be the religious and ceremonial center of Cobá, a large provincial city of the Yucatan, located fifty miles east of Chichén Itzá. The archaeological ruins have been said to be older than any other ruins found in Yucatan that date from 300 to 600 A. D. From the ruins, which are situated on the edge of the Yucatan, the ruins have been said to be older than any other ruins found in Yucatan that date from 300 to 600 A. D. From the ruins, which are situated on the edge of the Yucatan, the ruins have been said to be older than any other ruins found in Yucatan that date from 300 to 600 A. D.

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SKIN TEST FOR INHERENT IMMUNITY POWER

A test that will indicate whether or not children are susceptible to infectious parasites has been devised by Dr. Robert A. Rosenow of the University of Chicago, medical bacteriologist of the Mayo Foundation.

Rosenow of the skin at the end of eighteen to twenty-four hours at the point where suspensions of the parasites from children are injected is shown to indicate susceptibility. Suspensions of blood of human immunized with the virus and is immune. Serum prepared from the blood of human immunized with the virus reacts positively with toxic reaction.

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TABLOID BOOK REVIEW

CLOUD STUDIES; by Arthur W. Clayden. E. P. Dutton and Co., N.Y., 1925. 200pp., \$6.00.

In 1905 the first edition of this book appeared - at a time when most of our knowledge of the upper atmosphere was derived from ground observations, yet even so, this book was authoritative enough to be used during the war and after as a guide to aviators and the meteorologists who worked with them. In the present, the second edition, Prof. Clayden has completely revised it, and incorporated a large amount of information that has been derived from meteorological studies from the air, making one of the outstanding treatises on clouds, the most interesting of meteorological phenomena.

The illustrations, 64 in number, were all made by the author, and are admirable examples of cloud photography, and show good examples of various types. Even better examples of some of them, however, might have been obtained if the illustrations had not been confined to his own work, but if, in some case, such pictures as some of those by Ferdinand Ellerman, at Mt. Wilson Observatory, had been used instead. Prof. Clayden's complete explanation of his methods will enable the reader, if he so desires, to go out and do likewise.

MODERN ALADDINS AND THEIR MAGIC; by Charles E. Rush and Amy Winslow. Little, Brown & Company, Boston. \$1.50.

Here is a book that will both gratify and stimulate the natural curiosity of the young person. It tells in most delightful style, devoid alike of pedantry and silliness, how things are made and how they work; the common things of daily life, dishes, cloth, soap, pianos, telephones and electric lights. A good gift book for any wide awake youngster. And any oldster can find in it something that he needs to know but doesn't. Librarians will give it a front seat on the children's shelf.

Edwin E. Slosson.

THE WORSHIP OF NATURE. By Sir James George Frazer. New York: The Macmillan Company. 1926. \$4.00

This is the first volume of a pair, of which the second is announced to follow shortly. In the present book, three aspects under which man has worshipped Nature are discussed: Sky, Earth and Sun. It is a book for scholars by a great scholar; exhaustive, compact with crowded facts, liberally annotated. To a world that knows the Golden Bough, it would be simple presumption to undertake comment on the author's qualifications or his method and style of presentation. It is one of those works that upon publication automatically become indispensable to all libraries.

. The American death rate has been decreasing more rapidly in the cities than in rural districts.

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46

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If advantage were taken of all the natural factors which go to make up the local climate and if modern methods of agriculture were used, there would be enough moisture to insure a regular succession of crops, M. Toulaikoff maintains. Taken as a whole this part of Russia has never been extensively cultivated and in consequence is very fertile. Rye and summer wheat cultivated under modern conditions have been made to produce heavier yields than were ever before obtained in this section. Introduction of Indian corn, millet, beets and other vegetables which do well in hot weather might very profitably lead to cattle breeding and an increased milk supply it is believed.

Since drought in April, May and June always spelled disaster to 90 per cent. of the usual crops sown, in the old days the peasants always kept on hand reserve supplies to carry them over the bad years. Agricultural conditions, however, like everything else, have been completely unbalanced with consequent distress to the rural population.

The only solution, declares M. Toulaikoff, lies in building up a carefully organized system of farming that takes full advantage of natural local conditions, since irrigation on such a large scale and under present conditions is out of the question.

SMALLEST PARTICLES SAID TO SURROUND ELECTRONS

That particles even smaller than the electrons, hitherto supposed to be the smallest things in the world, surround the parts of which atoms are built up, and that this hypothesis may reconcile the old wave theory of light and the newer "quantum" theory, is the suggestion made by Sir Joseph Thomson, considered the leader of British physicists. This was made in his recent Kelvin lecture before the Institution of Electrical Engineers. According to modern notions, an atom consists of a central, rather massive, nucleus charged with positive electricity called a proton, surrounded at relatively great distances by ultra-minute particles of negative electricity called electrons, which rotate in different orbits around the nucleus.

In order to reconcile the modern view that energy is omitted in small separate bundles or "quanta", with the older ideas, Sir Joseph said, it is necessary to assume

that both the proton and its satellite electrons are surrounded by an atmosphere of much smaller particles, the impact of which on the protons and electrons causes them to vibrate and send out energy. "Both proton and electron must be regarded as nebular systems," he stated.

Theory indicates that the vibrations or oscillatory movements of protons and electrons should give rise to electrical waves, and Sir Joseph believes that such waves are actually produced, although ordinarily they are unable to escape from the outer confines of the atom, being reflected back into the interior. The so-called "quanta" of light he believes to consist of bundles of electrical waves shot out from the atom at the same time as ordinary electro-magnetic waves.

SCIENTISTS UNDERGO SLOW POISONING FROM MERCURY VAPOR.

X-rays are not the only toys of science to extract a toll of physical suffering at the hands of their intrepid users.

The insidious poisonous effects upon himself of mercury vapor, utilized in a period of research experiments extending over twenty years, have just been described in a scientific paper by the famous chemist, Prof. Alfred Stock of the Kaiser Wilhelm Institute. Chronic troubles of the nose, throat and intestines were rendered more aggravating by increasing nervousness and as time went on his naturally excellent memory and powers of concentration grew weaker and weaker. No course of treatment prescribed by his physicians proved permanently helpful.

Eventually it became evident that collaborators in his own laboratory as well as colleagues in other places were being affected in the same way. In consequence it was decided to readjust laboratory conditions so that as little free mercury would be exposed to the air as possible. And at the same time a thoroughly efficient ventilating system was installed.

In the course of a few months the various ailments fell off gradually and after a period of years health in some cases was restored completely when the experimenter refrained from further contacts with the fatal element.

Medical science, Prof. Stock declares, is not aware of the danger arising from the inhalation of mercury fumes, the chronic poisoning from which, in his opinion, is quite as fatal as the better known poisoning from lead.

Great waste in the paper industry is due to the decay of pulp and pulp wood.

Gas caused over one-fourth of American battle casualties in the European War.

NATIONAL MUSEUM GETS FAMOUS BEETLE COLLECTION

The insect collection of the National Museum, already one of the most valuable in the world, has been enriched by the well known beetle collection of the late Col. T. L. Casey, whose study of these insects had earned for him an international reputation.

For several decades Col. Casey collected beetles, large and small, for he had a preference for those of microscopic size, at the numerous army posts at which he was stationed in the United States and in the different countries in which he saw foreign service. The resulting collection comprises an accumulation of North American beetles which is one of the most complete in existence and contains as well many rare specimens from South America and other parts of the world. Col. Casey published in all twenty volumes and many shorter scientific papers on the beetles to which he devoted so much of his life.

Being a private collector of independent means, Col. Casey was able to indulge his fancy and at the same time add to the sum total of scientific knowledge, by studying many rare, little known species for which most specialists can spare little time from their investigation of insects of greater economic importance.

The Casey collection does include, however, many economic species that attack standing timber as well as numerous genera of weevils that are injurious to the roots and seeds of crops. These groups are being rearranged and made available for study in the Museum; those of greater economic importance receiving earlier attention so that specialists may have access to them for study at as early a date as possible.

This collection brings around 6,000 type specimens to the National collection, including nearly 4,000 not in its possession before, and opens up to scientists a wealth of valuable material for study.

IS TOBACCO INJURIOUS?

"To smoke or not to smoke, that is the question". Sir Humphrey Rolleston of the medical faculty of Cambridge, in a recent lecture before the Harrowgate Medical Society, has summed up the existing evidence pro and con as to what tobacco actually does to one, with the conclusion that it is not so bad as many would have us believe.

There are several outstanding features, however, that are not so reassuring. Psychological tests show that smoking lowers mental efficiency from 10 to 23 per cent. While these results are not conclusive, said Sir Humphrey, it shows a definite lessening of capacity to work. It is also suggested that premature senility is induced in heavy smokers by the sedative action of nicotine on the nervous system.

Experimentally it produces definite degeneration of the arteries in rabbits but authorities believe that if tobacco smoking is really a cause in arterio sclerosis, it is a slow one, so mingled with the general conditions of old age that discrimination of the actual factors are almost impossible.

"The effect on the stomach," said Sir Humphrey, "is important; X-ray bismuth

meals have shown that after a short period of increased contractility the motility of the stomach becomes paralyzed for an hour or so; as the subjective feeling of hunger very probably depends on contractions, the relief of hunger by smoking may thus be explained; it is said that dilation of the stomach may thus result."

Those who chew and take snuff may rest in peace. These practices are "attended by so little absorption of nicotine as to be comparatively free from untoward symptoms."

Sir Humphrey is of the opinion that tobacco has ousted alcohol as a sedative and narcotic. There is little doubt, he thinks, that the injurious effects of smoking are materially augmented by, if they are not in part due to, simultaneous alcoholism.

OIL MUST BE MADE TO DISAPPEAR FROM SEA

Representatives from twelve nations attended the recent International Conference on Oil Pollution in Washington to see what can be done to make the oil discharged from vessels vanish from the high seas.

The rapid increase in the number of oil burning ships has rendered the matter of water pollution from the waste oil a matter of world importance, for the discharge, being insoluble in water, is driven ashore by the wind with serious detrimental effects on bathers and fish alike.

All attempts to pass regulations effecting total prohibition of discharge of oil at sea have been abandoned in favor of a system of permanent zoning. Vessels will only be allowed to make such a discharge not less than fifty miles off shore and not farther than 150. Zones can be established by a nation only with the consent of its neighbor nations, which in actual practice means that each country will have to work out its own particular zoning problem.

There was considerable discussion during some of the sessions of the installation of separating machinery that would reclaim fully 40 per cent. of the waste oil, it was said, which could be used over again. Since apparatus of this sort would pay for itself in a few years several delegates strongly advocated this solution of the difficulty. The high initial cost as well as increased tonnage, however, were felt by the majority to be arguments against oil separators.

The rest of the time allotted to the conference was taken up with the problem of enforcement of the regulations just passed, a question of major importance since legal jurisdiction over a vessel out at sea beyond the reach of observation is difficult to maintain.

Twenty million pounds of explosives are used yearly on farms in this country.

PERMANENT PAINT FOR IRON DISCOVERED BY SWISS

The annual loss to the world due to the rusting of iron runs into many millions of dollars, and the problem of its prevention is being studied by scientists in all civilized countries. Zinc, tin, nickel, ordinary lead paint and many other things are useful preventives, but they do not last, and have to be re-applied more or less frequently.

A remarkable discovery is now announced from Switzerland. Dr. A. V. Blom, of Berne, has made a new lead paint which affords complete and permanent protection to iron. This paint is of a very special character; it is made by melting lead in an electric furnace and blowing through it air and certain reducing gases, so that a dross or scale is produced which consists of colloidal or extremely finely divided lead dispersed in yellow lead oxide. When it is powdered and mixed with a specially prepared linseed oil, and applied to an iron surface, very minute particles of lead separate out and gradually penetrate into the surface of the iron. The presence of the lead in the treated iron has been proved by photomicrographs and by chemical analysis. Iron objects painted with this new pigment have not shown any signs of rusting after prolonged exposure, or after being heated in steam. This discovery may lead to extremely important developments.

INJURY EPIDEMIC THREATENS HEALTH GAINS

Rejoicing over the lengthening of the average span of life from 41 to 56 years during the last few decades should be tempered by the fact that the death rate in the age group above 40 is increasing, Dr. J. Howard Beard, of the University of Illinois, claimed recently in warning students of the need of better health.

"The gain in the expectancy of life is almost entirely due to the saving of lives under 35 by the better control of communicable diseases and by infant welfare work," he said.

"At the ages of 45 to 50 there are four more deaths per thousand than 20 years ago; at 50 to 55, six more; and at 55 to 60, eight more," he pointed out.

There is a real danger that the net gain in lives saved from infection will be lost because of the increasing number of fatalities from accident, Dr. Beard believes. He states that an epidemic of contagion is being superseded by an epidemic of injury.

"Whether or not the average length of life shall continue to rise will be determined by how much each person will permit science, education, and religion to influence his habits, control his desires and direct his action," Dr. Beard added in conclusion.

The belief that stars can be seen in the daytime by looking down a deep well is untrue.

OLDEST YUCATAN RUINS DISCOVERED BY AMERICANS

The antiquity of the ancient Maya civilization of Yucatan has been pushed backwards by at least a century through discoveries that have just been made by archaeologists of the Carnegie Institution of Washington.

Hitherto unknown archaeological ruins, called Macanxoc, meaning "You cannot read it", were found by E. S. Thompson and J. Charlot, members of the Carnegie Institution staff, on May 24, according to information reported to Washington by Dr. Sylvanus G. Morley, in charge of the extensive diggings centered at Chichen Itza.

Macanxoc is said to be the religious and ceremonial center of Coba, a large provincial Old Maya Empire City, located fifty miles east of Chichen Itza. The archaeologists have been able to cipher sculptured inscriptions on stelae found at Macanxoc that date from 364 to 413 A. D. From the style, sculpture and dates of the hieroglyphics on the remains, the experts have concluded that Macanxoc is the oldest center of Maya civilization thus far known to Yucatan.

The most brilliant Maya paintings so far known and the best preserved painted serpent heads yet found were unearthed recently in the Temple of the Warriors at Chichen Itza by E. H. Morris. Remains of a serpent column temple decorated with these works of art were revealed when a corner pyramid was excavated.

SKIN TEST FOR INFANTILE PARALYSIS SUSCEPTIBILITY FOUND

A test that will indicate whether or not children are susceptible to infantile paralysis has probably been found by Dr. Edward C. Rosenow of the division of experimental bacteriology of the Mayo Foundation.

Redness of the skin at the end of eighteen to twenty-four hours at the point where suspensions of the streptococcus from infantile paralysis are injected is thought to indicate susceptibility. Complete lack of redness is considered to show that the person is immune. A serum prepared from the blood of horses immunized with the streptococcus prevents this toxic reaction.

Dr. Rosenow cites as supporting evidence for his contention: "the absence of marked reactions in persons fully recovered from poliomyelitis, the strongly positive reactions during the acute state of the disease, and the negative reaction during convalescence."

Skin tests that indicate susceptibility to scarlet fever and diphtheria are already in widespread use in medical practice. Children whose skins show positive reactions are then immunized to prevent their succumbing to the disease in question. At the present time no antitoxin for infantile paralysis has been developed and there are numerous points regarding the skin reaction described that have not yet been worked out, according to Dr. Rosenow.

TABLOID BOOK REVIEW

CLOUD STUDIES; by Arthur W. Clayden. E. P. Dutton and Co., N.Y., 1925. 200pp., \$6.00.

In 1905 the first edition of this book appeared - at a time when most of our knowledge of the upper atmosphere was derived from ground observations, yet even so, this book was authoritative enough to be used during the war and after as a guide to aviators and the meteorologists who worked with them. In the present, the second edition, Prof. Clayden has completely revised it, and incorporated a large amount of information that has been derived from meteorological studies from the air, making one of the outstanding treatises on clouds, the most interesting of meteorological phenomena.

The illustrations, 64 in number, were all made by the author, and are admirable examples of cloud photography, and show good examples of various types. Even better examples of some of them, however, might have been obtained if the illustrations had not been confined to his own work, but if, in some case, such pictures as some of those by Ferdinand Ellerman, at Mt. Wilson Observatory, had been used instead. Prof. Clayden's complete explanation of his methods will enable the reader, if he so desires, to go out and do likewise.

MODERN ALADDINS AND THEIR MAGIC; by Charles E. Rush and Amy Winslow. Little, Brown & Company, Boston. \$1.50.

Here is a book that will both gratify and stimulate the natural curiosity of the young person. It tells in most delightful style, devoid alike of pedantry and silliness, how things are made and how they work; the common things of daily life, dishes, cloth, soap, pianos, telephones and electric lights. A good gift book for any wide awake youngster. And any oldster can find in it something that he needs to know but doesn't. Librarians will give it a front seat on the children's shelf.

Edwin E. Slosson.

THE WORSHIP OF NATURE. By Sir James George Frazer. New York: The Macmillan Company. 1926. \$4.00

This is the first volume of a pair, of which the second is announced to follow shortly. In the present book, three aspects under which man has worshipped Nature are discussed: Sky, Earth and Sun. It is a book for scholars by a great scholar; exhaustive, compact with crowded facts, liberally annotated. To a world that knows the Golden Bough, it would be simple presumption to undertake comment on the author's qualifications or his method and style of presentation. It is one of those works that upon publication automatically become indispensable to all libraries.

. The American death rate has been decreasing more rapidly in the cities than in rural districts.
